

**Lesson: Science, K-1<sup>st</sup> Grade**  
**Topic: Scientific Inquiry**



# Rapunzel, Rapunzel, Let Your Hair Down

## Overview

Rapunzel provided a means for the witch/grandmother to reach the top of the tower by using her long strands of hair. Students will observe and describe the movement of a baby with long hair and objects attached to the hair.

## Learning Outcomes

### National Standards-Scientific Inquiry

Abilities necessary to do scientific inquiry  
Understandings about scientific inquiry

### Physical Science

Properties of objects and materials  
Position and motion of objects

### Science and Technology

Abilities of technical design

### Ohio Standards

#### Physical Science

Students demonstrate an understanding of the composition of physical systems and the concepts and principles that describe and predict physical interactions and events in the natural world. This includes demonstrating an understanding of the structure and properties of matter, the properties of materials and objects, chemical reactions and the conservation of matter. In addition, it includes understanding the nature, transfer and conservation of energy; motion and the forces affecting motion; and the nature of waves and interactions of matter and energy. Students demonstrate an understanding of the historical perspectives, scientific approaches and emerging scientific issues associated with the physical sciences.

## Materials

- Rice baby (directions to follow)- ½ yard of 44/45 inch fabric, strong twine or string, 3-4 pounds or rice, yarn, quilting thread
- Chart paper
- Markers
- Objects with mass of ½ to 1 pound (brick, piece of wood, toy car, doll, plastic animal, blocks, etc.)
- Balance scale and non standard units of weight measurement

## Vocabulary

- Motion
- Movement
- Side ways
- Up and down
- Zigzag

- Speed
- Direction

## Lesson

\*\*Before the lesson make at least 1 rice baby to use during the activity. Sew the fabric into a tube leaving one end open. Fill the tube with enough rice to make it full, leaving about 2 inches unfilled at the open end. Strongly sew the open end so that it is securely closed. Use strong twine or string, wrap around the filled tube, about 4-5 inches from the originally sealed end, several times, pulling tight enough to make an indentation like a neck. Tie off the twine/string securely. Cut many lengths of yarn 18-24 inches long. The more you use the thicker the “hair” will be when finished. Gather the lengths into a bundle and tie securely together about 1 ½ to 2 inches from one end. The short length is the bangs and the remainder the long part of the doll’s hair. Firmly sew the hair onto the top/end of the tube/head allowing the longer section to freely hang down. Add a face to the doll if you like.

### Orientation activity:

1. Review the story of Rapunzel with the students. Ask them what “favor” she did for the witch/grandmother. Ask what they would think if someone asked them to let their hair down for them to climb? Ask how the grandmother/witch felt as she was climbing/hanging on to the hair. What might that be like?

### Learning activity

1. Tell the students a story about your baby and how she came to you for them to use for this activity. Explain that she must be handled gently and carefully. Demonstrate rocking the baby so that the hair is hanging freely over your arm and moving with the rocking motion. Measure the length of the hair. Compare to students in the class. Focus on safety in the handling of a baby.
2. Ask: What happens when I rock the baby? Students will describe the movement of you, the baby, and/or the hair. Why do you think that happens? Students will say that you cause it when you move. How is the baby’s hair like Rapunzel’s hair? They should answer with long, hanging down, and moving.
3. Tell them that today they will rock the baby and watch her hair. What they see (observations) will be recorded on the chart paper on the board. Have one student come to the front of the circle and begin rocking the baby. Write the student’s name on the board and then the descriptions that the class gives for the movement of the hair. (Back and forth, sideways, fast, slow, etc.) Record several students this way.
4. What happens if we allow the baby to represent Rapunzel? What happens with Rapunzel’s hair? How could we show that now? Students will hold/rock the baby, but objects will be attached to it this time. Have several objects ready to tie onto the ends of the baby’s hair. Record the student’s name and the object on the chart. Before using the object, help the student find the mass of the object using a balance. The mass should be recorded on the chart in Teddy bear gram weights, linking cubes, or other unit of non standard measure appropriate for the class. Tie the object at the end of the hair. The student rocks the baby. Record the observations the class makes about the object’s movement. Ask the student to stop rocking and watch the object and hair. Record observations made by the students. (The object didn’t stop right away, it moved a different way when it hit the student’s body, etc.)

5. Review the observations. Underline or highlight the key words that describe the motion of the hair and/or the objects. In another color, underline or highlight the key words that show how things change speed, direction, or stop.

## Handouts

- none

## Evaluation and Follow Up

### Assessment tools and methods:

Ask each student to draw a picture of the baby showing one of the movements that they discussed that day. Have them copy the word that describes the movement. If they cannot write/spell/copy, scribe the word for them. Combine the pictures into a movement book. Look for conceptual understanding of the movement.

### Interdisciplinary connections:

#### Math:

Measurement of the hair on the doll. Make comparisons to the estimations of individual students in the class. Whose hair is longer, shorter?

Compare the mass of the objects. Help the students make a connection to the movement and time required to stop moving of the object and the amount of mass.

#### Physical education:

Students move their own body the same way that the hair on the doll is moving.